

## **REMARKS**

Favorable reconsideration of this application is requested in view of the above amendments and the following remarks. Claims 2, 3, 7, 9, 10, and 14 are amended. The revisions to these claims are fully supported by the specification and the previously presented claims. Claims 1, 4, 5, 11, 12, 16, and 18-22 are canceled without prejudice to or disclaimer of the subject matter recited therein. Claims 23-28 are added.

Claims 2, 3, 7, 9, 10, 14, 15, 17, and 23-28 are pending, with claims 2, 3, 9, and 10 being independent. Claims 2, 3, 9, and 10 have been rewritten in independent format, with the feature from previously canceled claims 6 and 13 removed and newly presented in dependent claims 23, 24, 26, and 27.

### **Claim rejections - 35 U.S.C. § 112**

Claim 5 stands rejected under 35 U.S.C. § 112, second paragraph. Applicant respectfully traverses this rejection; however, claim 5 has been canceled rendering the rejection moot.

### **Claim rejections - 35 U.S.C. § 102/103**

Claims 1-4, 7-12, and 14-22 stand rejected as being unpatentable over U.S. Patent No. 5,693,569 (Ueno). Applicant respectfully traverses this rejection; however, claims 1, 4, 11, 12, 16, and 18-22 have been canceled rendering the rejection moot with respect to those claims.

Independent claim 2 is directed to a semiconductor element. The semiconductor body includes a region for a group of transistors in which a plurality of insulated gate field-effect transistors are formed. A Schottky diode is included in the region for a group of transistors and is formed by contact between the drift region exposed between the transistors on the first surface side and the metal electrode. The field-effect transistor and the Schottky diode are arranged such that a first depletion layer stemming from the Schottky diode is superimposed on a second depletion layer spreading around the second conductivity type semiconductor in an off-state of the field-effect transistor.

By this arrangement, the semiconductor element is capable of quickly responding from an on-state to an off-state. *See, e.g.*, page 7, lines 18-31. In addition, because of the arrangement of the depletion layers, the breakdown voltage of the element is increased. *See, e.g.*, page 7, lines 32-37.

Ueno is directed to method of forming a silicon carbide trench MOSFET with a Schottky electrode. However, Ueno does not disclose a Schottky diode that is included in a region for a group of transistors and that is formed by contact between the drift region exposed between the transistors on the first surface side and the metal electrode. Ueno also does not teach or suggest the arrangement of depletion layers, as recited in claim 2, or provide the benefits that such an arrangement creates, as identified above. Accordingly, Applicant submits that claim 2 is allowable over the cited reference.

Moreover, it would not be obvious to modify Ueno in such a manner as is recited in claim 2. Applicant respectfully disagrees with the Examiner's stated position that the claimed multiple transistors are merely duplicates of the transistor shown in Ueno. Rather, the arrangement recited in claim 2 provides for multiple transistors provided at specific positions in the semiconductor element. As stated above, the recited arrangement provides a number of benefits. Thus, claim 2 does not merely recite an increase in the number of transistors.

Ueno does not teach or disclose at least the above-described features. Applicant therefore submits that claim 2 is allowable over the cited reference.

Independent claim 3 also recites the features identified above with respect to claim 2. Therefore, claim 3 is believed allowable over the cited reference for at least the same reasons provided above with respect to claim 2.

Claims 7, 15, and new claims 23-25 depend from one of claims 2 and 3. Therefore, each of those claims is believed allowable for at least the reason that it is dependent upon an allowable base claim.

Independent claim 9 is directed to a semiconductor element. The semiconductor body includes a region for a group of transistors in which a plurality of the insulated gate field-effect transistors are formed. A Schottky diode is included in the region for a group of transistors and is formed by contact between the drift region exposed between the transistors on the first surface side and the metal electrode. The field-effect transistor and the Schottky diode are arranged closely so that a second conductivity type semiconductor other than said second conductivity type semiconductor is not interposed between the field effect transistor and the Schottky diode. This arrangement increases the breakdown voltage of the diode itself. *See, e.g.,* page 8, lines 1-14.

Again, as noted above, Ueno does not disclose a Schottky diode that is included in a region for a group of transistors and that is formed by contact between the drift region exposed between the transistors on the first surface side and the metal electrode. In addition, Ueno also does not teach or suggest the arrangement where the field-effect transistor and the Schottky diode are arranged closely so that a second conductivity type semiconductor other than said second conductivity type semiconductor is not interposed between the field effect transistor and the Schottky diode.

Moreover, it would not be obvious to modify Ueno in such a manner as is recited in claim 9. Again, Applicant respectfully disagrees with the Examiner's stated position that the claimed multiple transistors are merely duplicates of the transistor shown in Ueno. Rather, the arrangement recited in claim 9 provides for multiple transistors provided at specific positions in the semiconductor element. As recited above, the recited arrangement provides a number of benefits. Thus, claim 9 does not merely recite an increase in the number of transistors.

Ueno does not teach or disclose at least the above-described features. Applicant therefore submits that claim 9 is allowable over the cited reference.

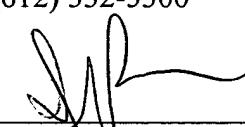
Independent claim 10 also recites the features identified above with respect to claim 9. Therefore, claim 9 is believed allowable over the cited reference for at least the same reasons provided above with respect to claim 9.

Claims 14, 17, and new claims 26-28 depend from one of claims 9 or 10. Therefore, each of those claims is believed allowable for at least the reason that it is dependent upon an allowable base claim.

In view of the above, favorable reconsideration in the form of a notice of allowance is requested.

Respectfully submitted,

MERCHANT & GOULD P.C.  
P.O. Box 2903  
Minneapolis, Minnesota 55402-0903  
(612) 332-5300

  
Douglas P. Mueller  
Reg. No. 30,300  
DPM:DTL

Date: October 8, 2003